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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

AUSTIN, MELISSA J

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/631,894

Applicant(s)

USHIRO ET AL.

Examiner

Melissa Austin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claims 1-24 are pending following the amendment filed 30 December 2004.

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 14. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 24 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Figure 4 and the specification do not enable for the volume of the discharged solution storage section to be set. Figure 4 shows by the dotted lines that the sheet member moves to allow a larger volume in the fuel storing section when the fuel section is full and to allow a larger volume in the discharged solution storing section as the fuel is used

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and fuel cell effluent is produced. Additionally, since the sheet member separating and sealing the fuel storing section and discharged solution storing section is flexible, it would not allow for the boundaries, and thus the volume, of the discharged solution storing section to be fixed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Prasad et al. (US 2003/0082427).

With respect to claim 11, Prasad discloses a fuel supply for a fuel cell that includes a fuel storage area enclosed by a first flexible inner container (applicant's fuel bag body). The first flexible inner container is positioned within the interior of an outer container (applicant's flexible casing). Fuel solution is passed from the fuel storage area to the fuel cell through a fuel solution outlet (applicant's fuel supply port) positioned at the opening of the first flexible inner container. The outer container also includes a waste inlet (applicant's discharged-solution recovery port). (pg. 2, [0021], Figure 2) The outer container is flexible as it is constructed of materials such as PEEK, polysulfone, polypropylene, polystyrene blends, and polymer blends, the same materials of which the flexible inner containers are made (pg. 3, [0034], [0028]). The fuel solution outlet and waste inlet are configured to be connected to a receptacle allowing for the transfer of fluids between the fuel supply and the fuel cell (pg. 3, [0036]).

Regarding claim 12, Prasad teaches the elements of claim 11 and also teaches the use of an absorbent material (applicant's desiccant) within the outer container (applicant's casing).

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Regarding claim 13, Prasad teaches the elements of claim 12 and also teaches a second flexible inner container (applicant's discharge solution bag) in fluid communication with the waste inlet (applicant's discharged-solution recovery port) that is housed within the outer container (pg. 2, [0027]; applicant's casing). This second flexible inner container bounds the waste storage area which may be filled with an absorbent material (pg. 3, [0035]; applicant's desiccant).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad et al. (US 2003/0082427) in view of Yamamoto (4,883,724).

Regarding claims 1, 7, and 8, Prasad teaches a fuel supply for a fuel cell that includes a fuel storage area (applicant's fuel storing section) and a waste storage area (applicant's discharged-solution storing section). Fuel solution is passed from the fuel storage area to the fuel cell through a fuel solution outlet (applicant's fuel supply port) and waste from the fuel cell is passed through the waste inlet (applicant's discharged-solution recovery port). (pg. 2, [0021], Figure 2) The fuel solution outlet and waste inlet are configured to be connected to a receptacle allowing for the transfer of fluids between the fuel supply and the fuel cell (pg. 3, [0036]). A movable barrier in the form of first inner flexible container (Figure 10-11, 142; applicant's single flexible sheet member) separates the fuel storage area from the waste storage area. The inner flexible container is made of materials impervious and chemically stable to the fuel, which may be alcohol (pg. 2, [0026-0028], claim 15). The inner container is attached to the fuel inlet (128) at the inner surface of the fuel pack. However, Prasad fails to teach a secondary cell for storing power generated by the fuel cell. The Yamamoto reference teaches a fuel cell generating hybrid system in which

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a storage battery (applicant's secondary cell) is connected to the output side of the fuel cell. This storage battery is charged for recovery with the surplus electric power of the fuel cell under light- or no-load operation and is used as a backup for the fuel cell under heavy-load operating conditions. (Col. 1, In 10-25) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a storage battery with the fuel cell as taught by Yamamoto with the fuel supply of Prasad in order to recover power generated by the fuel cell when operating under light-load conditions and to provide power in addition to that provided directly by the fuel cell in heavy-load operation.

With respect to claim 9, Prasad and Yamamoto teach the elements of claim 1, and Prasad also teaches an outer container (applicant's casing) containing a first flexible inner bag (applicant's bag body) that encloses the fuel storage area (applicant's fuel storing section). The outer container is flexible as it is constructed of materials such as PEEK, polysulfone, polypropylene, polystyrene blends, and polymer blends, the same materials of which the flexible inner containers are made (pg. 3, [0034], [0028]). A fuel solution outlet (applicant's fuel solution outlet) and a waste inlet (applicant's discharged-solution recovery port) are included in the outer container. The waste storage area (applicant's discharged-solution storing section) is bounded by the inner wall of the outer container and the outer wall of the first flexible inner container. (pg. 5, [0053]; Figure 12)

With respect to claim 10, Prasad and Yamamoto teach the elements of claim 9 but fail to teach a heating mechanism to heat the discharge solution in the discharged-solution storing section and the casing. The fuel cell system of claim 9 would be practical in small-scale fuel cell applications, such as portable electronic devices. These type devices are often used outdoors. If the temperature is cold enough to freeze the solution contained in the discharged-solution storing section or casing, the section container or casing could be ruptured by the expansion of the solution upon freezing. It is common in many arts to use heaters to raise the temperature to avoid freezing. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a heating mechanism for heating the solution in the discharged-solution storing section or casing in order to keep the discharged solution from freezing and possibly rupturing the container.

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7. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad et al. (US 2003/0082427) in view of Yamamoto (4,883,724).

With respect to claims 2-6, Prasad and Yamamoto teach the elements of claim 1 but fail to teach the provision of an antifreezing agent in (filled into or coated) the discharged-solution storing section or casing. The fuel cell system of claim 1 would be practical in small-scale fuel cell applications, such as portable electronic devices. These type devices are often used outdoors. If the temperature is cold enough to freeze the solution contained in the discharged-solution storing section, the section container could be ruptured by the expansion of the solution upon freezing. It is common in many arts to use antifreezing agents to avoid freezing. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included an antifreezing agent either filled into or coated onto the discharged-solution storing section in order to keep the discharged solution from freezing and possibly rupturing the container.

8. Claims 14, 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad et al. (US 2003/0082427).

With respect to claim 14, Prasad teaches the elements of claim 11, but fails to teach an antifreezing agent supplied in the casing. The fuel pack of claim 11 would be practical in small-scale fuel cell applications, such as portable electronic devices. These type devices are often used outdoors. If the temperature is cold enough to freeze the solution contained in the casing as in claim 11, the casing could be ruptured by the expansion of the solution upon freezing. It is common in many arts to use antifreezing agents to avoid freezing. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included an antifreezing agent in the casing in order to keep the discharged solution from freezing and possibly rupturing the casing.

With respect to claims 17-20, Prasad teaches a fuel supply for a fuel cell that includes a fuel storage area (applicant's fuel storing section) and a waste storage area (applicant's discharged-solution storing section). Fuel solution is passed from the fuel storage area to the fuel cell through a fuel solution outlet (applicant's fuel supply port) and waste from the fuel cell is passed through the waste inlet (applicant's discharged-solution recovery port). (pg. 2, [0021], Figure 2) The fuel solution outlet and waste inlet are

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configured to be connected to a receptacle allowing for the transfer of fluids between the fuel supply and the fuel cell (pg. 3, [0036]). A movable barrier in the form of first and second inner flexible containers separates the fuel storage area from the waste storage area. (pg. 2, [0026-0028], claim 15: applicant's deformable sheet member). However, Prasad fails to teach an antifreezing agent supplied in the discharged-solution storing section. The fuel cell system of claim 1 would be in small-scale fuel cell applications, such as portable electronic devices. These type devices are often used outdoors. If the temperature is cold enough to freeze the solution contained in the discharged-solution storing section, the section container could be ruptured by the expansion of the solution upon freezing. It is common in many arts to use antifreezing agents to avoid freezing. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included an antifreezing agent either filled into or coated onto the discharged-solution storing section in order to keep the discharged solution from freezing and possibly rupturing the container.

9. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad et al. (US 2003/0082427) and further in view of Lawrence et al. (US 2002/0197522). Prasad discloses a fuel supply for a fuel cell that includes a fuel storage area enclosed by a first flexible inner container (applicant's fuel storing section; Figure 10-11, 142). The first flexible inner container is positioned within the second flexible inner container (applicant's discharge storing section; Figure 10-11, 144) in fluid communication with the waste inlet (applicant's discharged-solution recovery port; Figure 10-11, 130) that is housed within an outer container. This second flexible inner container bounds the waste storage area which may be filled with an absorbent material (pg. 3, [0035]; applicant's desiccant). Fuel solution is passed from the fuel storage area to the fuel cell through a fuel solution outlet (applicant's fuel supply port; Figure 10-11, 128) positioned at the opening of the first flexible inner container. The fuel solution outlet and waste inlet are configured to be connected to a receptacle allowing for the transfer of fluids between the fuel supply and the fuel cell (pg. 3, [0036]). However, Prasad does not disclose at least the discharged solution storing section being replaceable. Lawrence teaches that in operation and use, a user will insert a removable fuel cartridge (applicant's fuel pack) into a fuel cell assembly. Once fuel is depleted from the fuel cartridge, the cartridge is disengaged and a fresh cartridge is used to replace the

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used cartridge. Such a replaceable fuel cartridge provides quick and convenient refueling. (Pg. 6, [0083]; Pg. 2, [0015-0016]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a removable/replaceable fuel cartridge as taught by Lawrence with the structure as taught by Prasad in order to provides quick and convenient refueling.

10. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad et al. (US 2003/0082427) and Yamamoto (4,883,724) as applied to claim 1 above, and further in view of Lawrence et al. (US 2002/0197522). Prasad and Yamamoto teach the fuel cell system of claim 1. Prasad also teaches the use of such a fuel system in laptop computers and PDAs (applicant's portable terminal), palm devices, portable televisions radios, compact disc and MP3 players, etc. but does not specifically include cameras or portable telephones. The Lawrence reference teaches the use of a removable fuel cartridge in fuel cell powered electronic devices such as mobile telephones, portable computers, PDAs, and other portable electronic devices. The use of such a fuel cartridge allows for quick and convenient refueling thus alleviating the lengthy periods of time required to recharge batteries. (pg. 2, [0022, 0016]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented the fuel cell system as taught by Prasad and Yamamoto into portable electronic devices as taught by Lawrence in order to avoid the inconvenient length of time required to recharge batteries used in the same devices.

Response to Arguments

11. Applicant's arguments, see Page 13, filed 30 December 2004, with respect to objections to the drawing regarding labeling as prior art, the incorrect chemical formula, "85" being used to reference two features, and "87" and "100" not shown in drawings have been fully considered and are persuasive. These objections to the drawings have been withdrawn.

12. Applicant's arguments, see Page 14-15, filed 30 December 2004, with respect to objections to the specification have been fully considered and are persuasive. These objections to the specification have

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been withdrawn. It is noted that the amendment to the specification to overcome the objection regarding the phrase "a digital camera C from above" is satisfactory; however, perhaps a better phrasing would be to move the phrase "from above" immediately after "loaded".

13. Applicant's arguments, see Page 15-16, filed 30 December 2004, with respect to objections to the claims have been fully considered and are persuasive. The objection to the claims has been withdrawn.

14. Applicant's arguments, see Page 16, filed 30 December 2004, with respect to 35 U.S.C. 112, first paragraph, rejection to the claim 23 have been fully considered and are persuasive. The 35 U.S.C. 112, first paragraph, rejection to the claim 23 has been withdrawn.

15. Applicant's arguments, see Page 16-17, filed 30 December 2004, with respect to 35 U.S.C. 112, second paragraph, rejection to the claim 1 have been fully considered and are persuasive. The 35 U.S.C. 112, second paragraph, rejection to the claim 1 has been withdrawn.

16. Applicant's arguments filed 30 December 2004 have been fully considered but they are not persuasive:

Drawings: Applicant states on page 14 of the arguments that reference character 14 is referred to on page 19 of the specification. Examiner again has not located reference character 14 in the specification. Reference characters 88, 89, and 110 are now found in the specification.

Claim 1: Applicant has amended the claim to include the limitation "a single flexible sheet member, which is deformable and is fixed to an inner surface of the fuel pack." Applicant argues that Prasad's separation provided by the moveable barrier that includes both the first and second inner flexible containers (Figure 2, 24 and 44) or by the entire flexible inner container (Figure 11, 142) does not teach or suggest a single flexible sheet member fixed to an inner surface. While the amendment is sufficient to overcome the 35

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U.S.C. 103 rejection presented in the previous Office Action, Examiner has rejected this claim, see 35 U.S.C. 103 above, using the same art as previously applied. Examiner does not agree that the entire flexible inner container, 142, fails to teach the limitation of a single flexible sheet member. The inner container is attached to the fuel inlet on the interior of the fuel pack and is composed of a single sheet of flexible material.

Claim 11: Applicant argues that Prasad does not teach a flexible casing and that the outer container taught by Prasad appears rigid in the drawings. Applicant also states that the flexible casing of the claimed invention allows fuel to be sent through the fuel supply port merely by applying pressure. While this statement is supported by the specification, it is not a limitation in any of the original or presently presented claims. Prasad teaches that the outer container is constructed of materials the same materials of which the flexible inner containers are made, such as PEEK, polysulfone, polypropylene, polystyrene blends, and polymer blends (pg. 3, [0034], [0028]). While Prasad does not address the issue of outer container flexibility, one of ordinary skill in the art would recognize that these materials are often used in the manufacture of flexible items. Faris et al. (6,558,825) teach fuel containment and recycling system for use with consumer electronics. Figure 4 shows a compressible reservoir container with a fixed partition to separate the fuel and the reaction product chambers. Pressure applied to the walls of the vessel will force-feed the fuel out of the storage vessel. The flexible vessel is made of plastic (Col. 10, ll. 45-64), just as Prasad's outer container.

Claim 15: Applicant's amendment to claim 15 overcomes the 35 U.S.C. 102 rejection presented in the previous Office Action. However, a new basis of rejection has been provided under 35 U.S.C. 103 above.

Claim 17: Applicant argues that the 35 U.S.C. 103 rejection of claim 17 presented in the previous Office Action is deficient as lacking objective evidence that it is common to use antifreezing agents with fuel cell devices. Applicant states that because the discharged solution is commonly water, the antifreezing unit prevents the discharged solution from being frozen in cold districts. Examiner stated that it was obvious

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to use antifreezing agents to avoid freezing in many arts, not specifically fuel cells. Bateman (5,909,818) teaches the addition of antifreeze to a water storage tank so that the water does not freeze. While Bateman's water storage tank is not used in conjunction with a fuel cell, the addition of antifreeze to the tank serves the same purpose as applicant's admitted purpose, that is, to prevent freezing of water in storage and, as such, is considered analogous art.

Dependent Claims:

Claims 2-6: See Claim 1 and Claim 17 above.

Claim 14: See Claim 11 and Claim 17 above.

Claim 9: See Claim 1 and Claim 11 above.

Claim 10: See Claim 1 above. Applicant argues that the 35 U.S.C. 103 rejection of claim 10 presented in the previous Office Action is deficient as lacking objective evidence that it is common to use a heater with a fuel cell device. JP 2004-214078 teaches a water storage tank for use in a fuel cell system in which is mounted a moveable heater that is used to melt ice that may form in the tank.

Claims 7,8, 21-23: See Claim 1 above.

Claims 12-14: See Claim 11 above.

Claim 16: See Claim 15 above.

Claims 18-20: See Claim 17 above.

New Claim 24: See Claim 1 above and the above 35 U.S.C. 112 rejection as support for this claim has not been found in the specification.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date

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of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Austin whose telephone number is (571) 272-1247. The examiner can normally be reached on Monday - Thursday, alt. Friday, 7:15 AM - 4:15 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mja

Melissa Austin
Patent Examiner
Art Unit 1745


PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER